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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/521,289	01/14/2005	Hubrecht Lambertus Tjalling De Bliek	NL 020623	8513

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PHILIPS INTELLECTUAL PROPERTY & STANDARDS
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BRIARCLIFF MANOR, NY 10510

EXAMINER	
BROOME, SAID A	

ART UNIT	PAPER NUMBER
2628	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/29/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

PTOL-90A (Rev. 10/06)

Office Action Summary	Application No. 10/521,289	Applicant(s) DE BLIEK, HUBRECHT LAMBERTUS TJALLING
	Examiner Said Broome	Art Unit 2628

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 March 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4 and 6-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4 and 6-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/6/07 has been entered.

Response to Amendment

1. This office action is in response to an amendment filed 3/6/2007.

2. Claims 1, 3, 4, 8 and 9 have been amended by the applicant.

3. Claim 5 has been cancelled.

4. Claims 2, 6 and 7 are original.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 8 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. Amended claim 8 recites a "computer readable medium containing code…", however no computer readable medium is provided in the Specification. The claim(s) contains subject matter which was not described in the specification in such a way as to enable

one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-3 and 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gering ("*A System for Surgical Planning and Guidance using Image Fusion and Interventional MR*") in view of Burke et al.(hereinafter "Burke", US Patent 6,421,454).

Regarding claim 1, 8 and 9, Gering teaches a method of producing and displaying an image on a display screen of a volume from a multi-dimensional object data set in section 1.2.1 1st ¶ lines 3-8 ("*The 3D Slicer provides an end-to-end solution that bundles different aspects of analysis into a single visualization…3D computer models of key structures such as skin, brain vessels, tumor, and motor cortex can be generated and visualized in a 3D scene…*"), and is shown in Figure 1-3. Gering also teaches a computer system in section 2.2 page 32 lines 1-2 ("*We operate the 3D Slicer on PCs running Windows and Sun workstations…*", Figure 2-13) that performs the processing of the image graphics data, as recited in claim 9. Therefore the computer system of Figure 2-13 contains the computer program or software described on page 16 6th ¶ lines 1-8, on a computer readable media to be executed by the system as recited in claim 8. Gering also teaches a surface associated with the volume is identified and an initial position

on the identified surface is selected in section 1.2.1 1st ¶ lines 3-4 ("*A yellow sphere is placed on the skin model at the entry point under investigation.*"), where it is described that the user identifies a certain region of the surface and selects an initial position on the surface, as shown in Figure 3-2. Gering also teaches at least one depth associated with the identified surface is selected and a reformat slice is produced from the object data set at a selected depth along the normal to the identified surface at the selected initial position on page 20 1st ¶ lines 6-10 ("*The surface models can then be visualized in the 3D view along with the reformatted slices... slices can selectively clip away portions of some models, such as the skin, to reveal other unclipped models beneath...Distances, angles, surface areas, and volumes of structures can be measured quantitatively.*") and in section 3.2 1st ¶ lines 1-7 ("*... neurosurgical planning is plotting an approach trajectory...The 3D Slicer facilitates trajectory planning...with the click of a button, the 3D view is set to align the viewing angle along the two points - from entry to target. The three reformatted planes become oriented relative to this trajectory.*"), where it is described that the volume data is clipped away based on a certain depth normal relative to the surface chosen by the user, as shown in Figure 3-2. Gering illustrates a resulting image displayed on a display screen in Figure 3-2. Gering teaches that a plurality of subsequent positions on the identified surface are sequentially selected by moving a cursor on the display screen over the resulting image in section 3.6 lines 4-5 ("*The ability to quickly align the reformatted slices along various approach trajectories enables investigation, and a form of simulation...*"), where it is described that several paths may be defined for the volumetric data, therefore subsequent positions may be selected on the identified surface by a user moving a yellow cursor on the screen, as illustrated in Figure 3-2, where the subsequent selection of positions creates reformatted images relative to the

position as described in section 3.2 1st ¶ lines 1-7 ("... *neurosurgical planning is plotting an approach trajectory...The 3D Slicer facilitates trajectory planning...with the click of a button, the 3D view is set to align the viewing angle along the two points - from entry to target. The three reformatted planes become oriented relative to this trajectory.*"). However, Gering fails to teach a depth associated with the surface selected from a priori information. Burke teaches a depth associated with the surface selected from a priori information in column 11 lines 22-25 ("*...an embodiment of the invention which locates the depth of solid features of interest. Such features are preferably user selected...*") and in column 11 lines 51-53 ("*The plane with...the feature of interest and its associated depth* Z_n *are stored in memory...*"), where it is described that planes contain an associated stored depth, therefore a selected plane contains a predetermined stored depth. It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Gering with Burke because this combination would provide a user with a slice of a region of interest within a volume where the selection of the slice is determined using predetermined information regarding the specific structure within the volume, where undesired slices are therefore excluded form the user's view.

Regarding claim 2, Gering teaches at least one further position on the identified surface is selected in section 3.6 lines 4-5 ("*The ability to quickly align the reformatted slices along various approach trajectories enables investigation...*"), where it is described that several positions for a trajectory may be defined, therefore subsequent multiple positions may be selected on the identified volumetric surface by a user. Gering also teaches a reformat slice is produced at said selected depth along the normal to the identified surface at said further selected position in section 3.2 1st ¶ lines 1-7 ("*...neurosurgical planning is plotting an approach*

trajectory…The 3D Slicer facilitates trajectory planning…with the click of a button, the 3D view is set to align the viewing angle along the two points - from entry to target…reformatted planes become oriented relative to this trajectory.") and is shown in Figures 2-11 and 3-2.

Regarding claim 3, Gering teaches a method of producing and displaying an image on a display screen of a volume from a multi-dimensional object data set in section 1.2.1 1st ¶ lines 3-8 ("*The 3D Slicer provides an end-to-end solution that bundles different aspects of analysis into a single visualization…3D computer models of key structures such as skin, brain vessels, tumor, and motor cortex can be generated and visualized in a 3D scene…*"), and is shown in Figure 1-3. Gering teaches a surface associated with the volume is identified and an initial position on the identified surface is selected in section 1.2.1 1st ¶ lines 3-4 ("*A yellow sphere is placed on the skin model at the entry point under investigation.*"), where it is described that the user identifies a certain region of the surface and selects an initial position on the surface, as shown in Figure 3-2. Gering also teaches at least one depth associated with the identified surface is selected and a reformat slice is produced from the object data set at a selected depth along the normal to the identified surface at the selected initial position on page 20 1st ¶ lines 6-10 ("*The surface models can then be visualized in the 3D view along with the reformatted slices, and the slices can selectively clip away portions of some models, such as the skin, to reveal other unclipped models beneath…Distances, angles, surface areas, and volumes of structures can be measured quantitatively.*") and in section 3.2 1st ¶ lines 1-7 ("*… neurosurgical planning is plotting an approach trajectory…The 3D Slicer facilitates trajectory planning…with the click of a button, the 3D view is set to align the viewing angle along the two points - from entry to target. The three reformatted planes become oriented relative to this trajectory.*"), where it is described that

the volume data is clipped away based on a certain depth normal relative to the surface chosen by the user, as shown in Figure 3-2. Gering illustrates a resulting image displayed on a display screen in Figure 2-11, and shows reformat slices are produced perpendicular to the normal to the identified surface at the selected position in Figure 3-2. Gering teaches that a plurality of subsequent positions on the identified surface are sequentially selected by moving a cursor on the display screen over the resulting image in section 3.6 lines 4-5 ("*The ability to quickly align the reformatted slices along various approach trajectories enables investigation, and a form of simulation…*"), where it is described that several paths may be defined for the volumetric data, therefore subsequent positions may be selected on the identified surface by a user moving a yellow cursor on the screen, as illustrated in Figure 3-2, where the subsequent selection of positions creates reformatted images relative to the position as described in section 3.2 1st ¶ lines 1-7 ("*…neurosurgical planning is plotting an approach trajectory…The 3D Slicer facilitates trajectory planning…with the click of a button, the 3D view is set to align the viewing angle along the two points - from entry to target. The three reformatted planes become oriented relative to this trajectory.*"). However, Gering fails to teach that the depth associated with the identified surface is selected by selecting one of the reformat slices. Burke teaches the depth associated with the identified surface is selected by selecting one of the reformat slices in column 11 lines 34-40 ("*The image processor 14 then selects (step 134) a planar slice at depth Z_n from the three dimensional ultrasound data…*"), where it is described that the slice is selected at a certain associated depth. It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Gering with Burke because this combination would provide a slice of region of interest within a volume cut from a position chosen by the

user, as taught by Gering in section 3.2 1st ¶ lines 1-7, where the depth would be determined based on the selection of a certain slice of interest without requiring prior depth data, as taught by Burke in column 11 lines 22-25–34-35.

Regarding claim 6, Gering teaches the reformat slice is perpendicular to the normal to the identified surface at the selected point on the identified surface, at the point on the reformat slice where the reformat slice is intersected by said normal to the identified surface in section 3.2 1st ¶ lines 1-7 ("*...neurosurgical planning is plotting an approach trajectory...The 3D Slicer facilitates trajectory planning...with the click of a button, the 3D view is set to align the viewing angle along the two points - from entry to target...reformatted planes become oriented relative to this trajectory.*"), where it is described that slices are relative to the trajectory path to identified surface specified by the user, as shown in Figure 3-2.

Regarding claim 7, Gering teaches a reformat slice, which is a slice produced from the three-dimensional image at a certain depth, as described in section 3.2 1st ¶ lines 1-7 ("*...The 3D Slicer facilitates trajectory planning...with the click of a button, the 3D view is set to align the viewing angle along the two points - from entry to target...reformatted planes become oriented relative to this trajectory.*") and on page 20 1st ¶ lines 6-10 ("*The surface models can then be visualized in the 3D view...and the slices can selectively clip away portions of some models, such as the skin, to reveal other unclipped models beneath...Distances, angles, surface areas, and volumes of structures can be measured quantitatively.*"), and is produced from a stack of reformat slices as described in section 2.3.1 3rd ¶ lines 1-3 ("*Volume data is stored as a stack of 2D images as displayed in Figure 2-3. The 3D Slicer enables one to better visualize volume data through Multi-Plane Reformatting (MPR). A reformatted image is derived by arbitrarily*

orienting a plane in 3D space…"), therefore the reformat slices are stacked to form the 3D data and are cut relative toe the desired depth as shown in Figures 2-11 and 3-2.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gering in view of Yanof et al.(hereinafter "Yanof", US Patent 5,371,778).

Regarding claim 4, Gering teaches a method of producing and displaying an image on a display screen of a volume from a multi-dimensional object data set in section 1.2.1 1st ¶ lines 3-8 ("*The 3D Slicer provides an end-to-end solution that bundles different aspects of analysis into a single visualization…3D computer models of key structures such as skin, brain vessels, tumor, and motor cortex can be generated and visualized in a 3D scene…*"), and is shown in Figure 1-3. Gering teaches a surface associated with the volume is identified and an initial position on the identified surface is selected in section 1.2.1 1st ¶ lines 3-4 ("*A yellow sphere is placed on the skin model at the entry point under investigation.*"), where it is described that the user identifies a certain region of the surface and selects an initial position on the surface, as shown in Figure 3-2. Gering also teaches at least one depth associated with the identified surface is selected and a reformat slice is produced from the object data set at a selected depth along the normal to the identified surface at the selected initial position on page 20 1st ¶ lines 6-10 ("*The surface models can then be visualized in the 3D view along with the reformatted slices, and the slices can selectively clip away portions of some models, such as the skin, to reveal other unclipped models beneath…Distances, angles, surface areas, and volumes of structures can be measured quantitatively.*") and in section 3.2 1st ¶ lines 1-7 ("… *neurosurgical planning is plotting an approach trajectory…The 3D Slicer facilitates trajectory planning…with the click of a button,*

the 3D view is set to align the viewing angle along the two points - from entry to target. The three reformatted planes become oriented relative to this trajectory."), where it is described that the volume data is clipped away based on a certain depth normal relative to the surface chosen by the user, as shown in Figure 3-2. Gering illustrates a resulting image displayed on a display screen in Figure 2-11, and shows reformat slices are produced perpendicular to the normal to the identified surface at the selected position in Figure 3-2. Gering teaches that a plurality of subsequent positions on the identified surface are sequentially selected by moving a cursor on the display screen over the resulting image in section 3.6 lines 4-5 ("*The ability to quickly align the reformatted slices along various approach trajectories enables investigation, and a form of simulation…*"), where it is described that several paths may be defined for the volumetric data, therefore subsequent positions may be selected on the identified surface by a user moving a yellow cursor on the screen, as illustrated in Figure 3-2, where the subsequent selection of positions creates reformatted images relative to the position as described in section 3.2 1st ¶ lines 1-7 ("*A key component of neurosurgical planning is plotting an approach trajectory…The 3D Slicer facilitates trajectory planning…with the click of a button, the 3D view is set to align the viewing angle along the two points - from entry to target. The three reformatted planes become oriented relative to this trajectory.*"). However, Gering fails to teach a depth associated with a created transverse view. Yanof describes a transverse view, which includes the identified surface and the selected point in column 4 lines 53-58 ("*…A second view port 32 displays the data along the transverse plane 10 through the position of the cursor…the displayed (x,y) plane is selected by adjusting the selected distance along the z-axis.*"), where it is described that a transverse view is established which includes the identified surface and selected point at a certain

depth, as described in column 5 lines 26-49 ("*...the operator may define cutting planes, either parallel to one of the transverse, coronal, or sagittal planes, or oblique cutting planes...the projection image can be edited for tissue type to "peel away" selected tissue types, thereby providing a new surface for the cursor to traverse...the projection image can be edited for tissue type to "peel away" selected tissue types, thereby providing a new surface for the cursor to traverse.*"). It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Gering with Yanof because this combination would provide user selection of a slice of a specific area of interest within a volume, as taught by Gering in section 2.4.3 1st ¶ lines 3-4, where selection would be based on a region of interest within the slice, as taught by Yanof in column 5 lines 46-49, thereby excluding undesired areas within the volume.

Response to Arguments

The applicant argues the 35 U.S.C. 101 rejection of claim 8. Due to the amendment to claim 8, the applicant's arguments are persuasive and the examiner withdraws the rejection of claim 8 under 35 U.S.C. 101, that now provides a computer readable medium containing code for a computer program, which is statutory. However, the Specification does not provide a description of the computer readable medium to enable one of ordinary skill in the art to make and/or use the invention, claim 8 is therefore rejected under 35 U.S.C. 112 first paragraph.

Applicant's arguments with respect to claims 1-4 and 6-9, in regards to the 35 U.S.C. 103(a) rejection of claims 1-3 and 6-9 using Schnider in view of Burke and of claim 4 using Schnider in view of Yanof, have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Said Broome whose telephone number is (571)272-2931. The examiner can normally be reached on 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka Chauhan can be reached on (571)272-7782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

S. Broome SB
3/23/07 SB

Mark Zimmerman

MARK ZIMMERMAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600